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ABSTRACT

A New Zealand pilot study examined Tests of Reading Comprehension (TORCH) scores compared to PAT: Reading Comprehension scores and compared with teacher ratings. TORCH is a reading test package published in 1987 by the Australian Council for Educational Research. It consists of 14 untimed passages intended to assess the extent to which readers in the Standard 2 to Form 5 age range are able to obtain meaning from text. It is based on a modified cloze format in which students are presented with a passage of text, and a retelling of the passage in different words. Approximately 350 pupils from Standard 3, Form 1, and Form 3 were tested on a TORCH passage and the appropriate level of the PAT. Teachers also rated their pupils' reading comprehension on a 1-5 scale. The study looked at overall correlations between the tests, and between teacher ratings and each of the tests, as well as correlations by gender, socioeconomic status, and ethnic group. Overall, results indicated that pupils' scores on TORCH correlated well with PAT and with teacher ratings. Since teacher ratings are based on standard classroom practice, these results present an encouraging picture of the validity of TORCH for the New Zealand classroom. For Maori and Pacific Island groups, correlations with both teacher ratings and the PAT were generally the same or higher than correlations for the European group. (Eleven tables of data are included.) (SR)

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TESTS OF READING COMPREHENSION (TORCH)

PILOT STUDY

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NZCER

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TESTS OF READING COMPREHENSION (TORCH) PILOT STUDY

J R Burgon
NZCER

In 1987 the Australian Council for Educational Research published a new reading test package, *The Tests of Reading Comprehension (TORCH)*. The tests consist of 14 untimed passages and are intended to assess the extent to which readers in the Standard 2 to Form 5 age range are able to obtain meaning from text. The TORCH is based on a modified cloze format in which students are presented with a passage of text, and a retelling of the passage in different words. The retelling of the passage contains gaps corresponding to details in the original text. The students are required to complete the cloze task with one or more of their own words. A number of different answers are acceptable, providing they make sense in the context of the passage.

All the tests provide measures of reading comprehension and can be placed on a common scale of 0 to 100. Because scores on different tests can be placed on a single scale, the test authors state that comparisons can be made between scores from the different passages in TORCH. Scores can then be interpreted from content-referenced criteria (in the manual) or from normative data based on Australian reference groups.

NZCER was interested to know whether the tests were appropriate for the New Zealand classroom. Accordingly, in November 1987, a questionnaire was sent to District Reading Advisers regarding TORCH. The questionnaire sought opinions regarding the suitability of the passages' range and content, the suitability of both the manual and the scoring system for New Zealand use, the relevance and appropriateness of TORCH as a diagnostic tool and its suitability as a measure of the classroom reading process in this country.

Detailed responses to that questionnaire are outlined in a separate report (Burgon, 1988); in general most respondents liked aspects of TORCH but all had reservations of one kind or another about the test. Some concerns were expressed regarding the appropriateness of the passages for New Zealand groups, more particularly for Maori and Pacific Island pupils, and for pupils from lower socio-economic status (SES) groups. Opinion was also divided as to the usefulness of the test results for the New Zealand classroom. A small pilot study was considered an objective way to examine some of the concerns raised by the reading advisers. While the present study does not examine the usefulness of the test results for the New

Zealand classroom, it can supply some preliminary information on the validity and reliability of the test itself for New Zealand pupils in general and for various subgroups in particular.

The study looks at the correlations between performance on a TORCH passage, performance on the *PAT: Reading Comprehension* (Research Form C), and teacher ratings of each pupil's reading comprehension. Overall correlations are looked at for pupils at the Standard 3, Form 1 and Form 3 class levels. Additionally correlations by gender, SES and ethnic group are examined for each of the three class levels.

METHOD

Subjects

The Standard 3 sample included 116 pupils from four different primary schools in the Wellington area. They were chosen to reflect a wide range of SES and ethnic groups and consisted of 55 boys and 61 girls. The Form 1 sample consisted of 88 pupils, 48 males and 40 females, from two different intermediate schools in the Wellington urban area. The Form 3 sample consisted of 158 pupils, 71 males and 87 females, from a boys' college, a girls' college and a co-educational college.

Ethnic and SES sample sizes are reported in the results section; some inconsistencies in those sample sizes are evident due to some children not sitting both tests, and also to background data not being available for all children.

Procedure

Pupils sat two tests; half sat the *PAT: Reading Comprehension* first and half sat a TORCH passage first. The period between sitting the two passages varied between two days and seven days. Background data on pupils' ethnic group and parental occupation was gained from school records or from teachers, depending on each school's preference. The Elley-Irving Socio-Economic Index (1985) was used to determine SES.

Hopkins et al (1985) found that teacher ratings were almost as good as teacher rankings in assessing pupil attainment in various subject areas, and they suggest that there is less teacher frustration with rating than with ranking. Accordingly teachers of the various classes were also asked to provide a rating of each pupil's reading comprehension on a 1 to 5 scale.

The criteria supplied were taken from the instructions of the P&A Register for primary schools, i.e.,

1 = outstanding (approximately 5% of all children at this age)

2 = above average (approximately 25% of all children at this age)

3 = average (approximately 50%)

4 = below average (approximately 25%)

5 = extremely limited (approximately 5%).

In this study teachers at the Standard 3 and Form 1 levels indicated that they used an informal prose inventory to assess reading levels, and had based their teacher ratings largely on those results. The Form 3 teachers had all administered PAT's to their classes and had largely used those results to rate their pupils.

MATERIALS

The *PAT: Reading Comprehension*, Form C was used; levels 2, 5 and 7. Four TORCH passages were used; Standard 3 sat *Lizards Love Eggs*, Form 1 sat *A Horse of Her Own*, and at the Form 3 level two different passages were used. The co-educational high school students sat *Swamp Creature*, and the other two groups sat *I Want to be Andy*. Originally, *Swamp Creature* was the designated passage for all Form 3 pupils, but after trialling at the co-ed school it was decided that the passage was too simple for the Form 3 level, and so *I Want to be Andy* was substituted for the other two schools. The results from *Swamp Creature* have been retained for interest.

RESULTS AND DISCUSSION

Table 1 shows the overall means and standard deviations for the two tests at each class level. Aside from the *Swamp Creature* TORCH passage, which had a high mean raw score and a small standard deviation, the other tests all showed a reasonable range of marks. While the mean raw scores for the TORCH passages are closer to the maximum possible scores, the range of scores was comparatively larger on the TORCH.

Table 2 gives the details of means and standard deviations for boys' and girls' at each class level. Some differences at the Standard 3 and Form 3 levels are noted.

Tables 3 and 4 describe ethnic and SES data.

At all levels there were some differences in mean scores of the TORCH and PAT according to SES levels and ethnic group. However, because of the small and uneven sample sizes of those groups caution should be exercised in considering those differences. Both the Pacific Island group and the 'other' group contained a number of children for whom English was a second

TABLE 1: *Overall Means and Standard Deviations for Each Class Level for TORCH and PAT*

	TORCH (20 items)		PAT (41 items)	
	Mean	s.d	Mean	s.d
Standard 3	13.2 n = 105	6.1	21.9 n = 105	6.8
Form 1	12.7 n = 79	6.8	19.7 n = 79	8.4
Form 3 (Swamp Creature)	20.4 n = 41	2.7	22.5 n = 147	7.2
Form 3 (I Want to be Andy)	14.2 n = 95	5.2		

n = number of pupils sitting the test
s.d = standard deviation

TABLE 2: *Means and Standard Deviations for Boys and Girls at Each Level for TORCH and PAT*

	TORCH		PAT	
	Male	Female	Male	Female
	Mean s.d	Mean s.d	Mean s.d	Mean s.d
Standard 3	12.2 6.3 n = 48	13.9 5.8 n = 57	20.6 7.3 n = 48	23.0 6.2 n = 57
Form 1	12.3 7.0 n = 43	13.2 6.7 n = 36	19.9 8.8 n = 43	19.5 7.8 n = 36
Form 3 (Swamp Creature)	19.7 3.1 n = 17	20.8 2.8 n = 25	20.8 6.8 n = 66	23.5 8.6 n = 68
Form 3 (I Want to be Andy)	12.9 4.6 n = 49	16.2 5.4 n = 43		

language. Consequently the similarity of scores for Maori children and those children at the Standard 3 level and the Form 3 level on both PAT and TORCH indicates difficulties over and above second language factors.

Teacher ratings were reported on a 1-5 scale and are accordingly rather too coarse to be averaged in a similar way to the test scores with any meaning. There was at each level a spread of scores similar to the

range outlined in the Procedure section of the present study.

TABLE 3: *Means and Standard Deviations for Each Ethnic Group for Each Level for TORCH and PAT*

		TORCH				PAT			
		Euro	Maori	Pac Is	Other	Euro	Maori	Pac Is	Other
Standard 3	$\bar{x}$	15.5	9.5	8.9	10.6	24.5	19.0	17.3	16.4
	s.d	4.6	6.6	6.4	6.2	5.3	7.3	6.6	5.7
	n	64	19	16	10	64	20	18	8
Form 1	$\bar{x}$	14.6	11.4	7.8	10.6	22.5	18.3	12.6	15.6
	s.d	6.5	6.8	5.7	6.8	7.0	8.8	9.3	7.1
	n	44	17	9	10	44	18	8	10
Form 3 (Swamp Creature)	$\bar{x}$	20.4	18.7						
	s.d	2.8	3.0						
	n	36	3	1	1	100	20	10	23
Form 3 (I Want to be Andy)	$\bar{x}$	15.7	13.0	13.0	12.0	23.8	20.0	21.6	18.3
	s.d	4.2	5.9	7.2	5.4	7.5	7.4	8.8	7.7
	n	54	1	10	20				

$\bar{x}$ = mean

TABLE 4: *Means and Standard Deviations for SES 1-3 and SES 4-6 for Each Class Level for TORCH and PAT*

		TORCH		PAT	
		SES 1-3	SES 4-6	SES 1-3	SES 4-6
Standard 3	$\bar{x}$	15.6	12.0	24.3	20.7
	s.d	4.7	5.8	6.0	5.9
	n	48	34	48	34
Form 1	$\bar{x}$	14.2	11.0	22.3	16.2
	s.d	6.4	6.9	8.3	6.9
	n	47	29	47	29
Form 3 (Swamp Creature)	$\bar{x}$	21.2	20.1		
	s.d	2.2	2.5		
	n	15	25	67	68
Form 3 (I Want to be Andy)	$\bar{x}$	15.6	13.3	25.1	20.8
	s.d	5.2	4.9	8.2	6.0
	n	42	43		

Table 5 presents the overall correlations between TORCH and PAT for each level. Pearson product moment correlations were calculated overall for PAT and TORCH, for TORCH and teacher ratings, and for PAT and teacher ratings. At the Standard 3 level the PAT and TORCH correlations were high. Correlations were also moderately high in the Form 1 sample. The correlation between the *Swamp Creature* and the PAT was much lower than other correlations reported. This most likely reflects the ceiling effect as the mean score for this TORCH passage was very high with a narrow standard deviation. Correlation for the other Form 3 TORCH passage and PAT was again high, although not as high as the Standard 3 correlations.

TABLE 5: *Overall Correlations Between TORCH and PAT at Each Level*

Class Level	Correlation
Standard 3	.77 n = 105
Form 1	.74 n = 79
Form 3 (Swamp Creature)	.42 n = 42
Form 3 (I Want to be Andy)	.67 n = 92

Table 6 presents TORCH and PAT correlations by gender for each class level. Correlations remained reasonably high when examined by gender, but were lower at the Form 3 level. The difference in male/female correlations in the *Swamp Creature* passage can probably be explained, in part at least, by the ceiling effect on that test; the boys had a slightly lower mean than the girls and accordingly had a little more range in their test scores which meant a slightly higher correlation with the PAT (which did not have a ceiling effect). The reverse trend of correlation on *I Want to be Andy* cannot be explained similarly. On this passage the females' correlation between tests was .75, compared to the male correlation of .55, but this difference was not significant at the .05 level ($z = 1.634$).

Table 7 looks at correlations between the two tests by ethnic group for each class level. Because of sample sizes in some ethnic groups, and the general concern expressed by reading advisers for the combined group of Maori and Pacific Islanders when using TORCH, the scores for Maori and

TABLE 6: *Correlations by Gender between TORCH and PAT at Each Class Level*

	Male	Female
Standard 3	.80 n = 48	.72 n = 57
Form 1	.75 n = 43	.73 n = 36
Form 3 (Swamp Creature)	.54 n = 17	.31 n = 25
Form 3 (I Want to be Andy)	.55 n = 49	.75 n = 43

Pacific Islanders have been combined when considering correlations. Because of the smaller sample sizes for the 'Other' group, correlations have not been calculated for that group. Caution is again required due to the small sample size on which some correlations are based. However, it is noted that correlations are generally higher for the Maori and Pacific Islander group.

TABLE 7: *European, and Maori and Pacific Islander Correlations Between TORCH and PAT at Each Class Level*

	European	Maori and Pacific Islanders
Standard 3	.60 n = 64	.81 n = 33
Form 1	.64 n = 44	.79 n = 25
Form 3 (Swamp Creature)	.40 n = 37	.66 n = 4
Form 3 (I Want to be Andy)	.70 n = 52	.73 n = 20

It is realized that some concern is also felt regarding the value of the TORCH for assessment of reading comprehension in children with English as a second language. At the Form 3 level, the PAT scores and the TORCH scores (for *I Want to be Andy*) were correlated for the Pacific Islander and Other groups combined as it was known that the majority of pupils in this group spoke English as a second language. The correlation between the two tests for this combined group was .56, with a sample size of 27. While

this correlation is lower than the overall correlation for Form 3 PAT and the *I Want to be Andy* passage, the difference is not statistically significant.

Table 8 looks at the correlations for the two tests by SES groups. For reasons of sample size SES groups were combined as SES 1-3 and SES 4-6. Correlations were reasonably consistent across the SES groups at each class level, again except for the passage *Swamp Creature*.

TABLE 8: *Correlations Between TORCH and PAT at Each Class Level for SES Groups*

	SES 1-3	SES 4-6
Standard 3	.80 n = 80	.67 n = 34
Form 1	.71 n = 47	.71 n = 29
Form 3 (Swamp Creature)	.55 n = 15	.20 n = 25
Form 3 (I Want to be Andy)	.72 n = 42	.71 n = 69

Table 9 presents the overall correlations of teacher ratings for each of the two tests. Correlations involving the teacher ratings are corrected for shortness of range using 'rc = r/cxcy' (Guildford, 1956, p. 330). Teacher correlation and TORCH was high at the Standard 3 level. Similarly, Standard 3 PAT and teacher rating correlations were also high. The Form 1 sample teacher/TORCH correlation was not as high but was still in the moderately high range as were the PAT/teacher correlations. The *Swamp Creature* teacher rating correlation was markedly lower for reasons already outlined. With the other Form 3 passage, the teacher rating correlation was in the moderately high range for TORCH and significantly lower for PAT, ($z = 1.96$, significant at the .025 level). This is surprising since the Form 3 teachers used PAT scores from the beginning of the year to rate their pupils.

Male/female correlations followed similar trends to the overall teacher rating/test score correlations; they approached the upper limits for Standard 3, were moderately high in Form 1 and in Form 3 the ratings correlated more highly with the TORCH passage *I Want to be Andy* than with the PAT score.

Table 10 contrasts the Maori and Pacific Islander group with the European group, and correlations vary a little more. At the Standard 3

TABLE 9: *Overall Correlations of Teacher Ratings for PAT and TORCH at Each Class Level*

	Teacher Rating and TORCH	Teacher Rating and PAT
Standard 3	.83 n = 94	.80 n = 97
Form 1	.72 n = 81	.65 n = 84
Form 3 (Swamp Creature)	.41 n = 48	.54 n = 140
Form 3 (I Want to be Andy)	.72 n = 95	

teacher rating was more highly correlated with PAT for the Polynesian group than for the European group, (z = 2.52). Although the teacher rating/ TORCH correlation was higher for the Polynesian group this difference was not statistically significant. This trend did not continue at the Form 1 level, and it may be that sample sizes are too small to make any predictions from this data. At Form 3 the correlation between teacher rating and TORCH was again higher for the Polynesian group and but the difference was not significant at the .05 level, (z = 1.582).

TABLE 10: *Teacher Rating/Test Score Correlations for European, and Maori and Pacific Island Groups at Each Class Level*

	European		Maori and Pacific Islander	
	Teacher Rating and TORCH	Teacher Rating and PAT	Teacher Rating and TORCH	Teacher Rating and PAT
Standard 3	.74 n = 55	.60 n = 56	.83 n = 30	.81 n = 33
Form 1	.73 n = 45	.67 n = 48	.60 n = 25	.52 n = 26
Form 3 (Swamp Creature)	.44 n = 42	.53 n = 96	n/a n = 3	.65 n = 23
Form 3 (I Want to be Andy)	.58 n = 52		.80 n = 21	

Table 11 shows the details for SES group correlations for test score and teacher ratings. When teacher rating/test score correlations are examined according to SES group there were no significant differences at the Standard 3 level. At the Form 1 level TORCH correlated significantly better with teacher ratings than did PAT for the SES group 4-6, ($z = 2.18$), but there was no difference for the SES group 1-3. At the Form 3 level the differences followed the overall Form 3 trend.

TABLE 11: *Teacher Rating/Test Score Correlations for SES Groups at Each Class Level*

	SES 1-3		SES 4-6	
	Teacher Rating and TORCH	Teacher Rating and PAT	Teacher Rating and TORCH	Teacher Rating and PAT
Standard 3	.78 n = 44	.71 n = 45	.70 n = 30	.81 n = 32
Form 1	.64 n = 49	.63 n = 49	.78 n = 29	.47 n = 29
Form 3 (Swamp Creature)	.39 n = 15	.47 n = 59	.34 n = 23	.53 n = 70
Form 3 (I Want to be Andy)	.73 n = 42		.73 n = 42	

CONCLUSIONS

The present study had comparatively small sample sizes at the three class levels, but nevertheless presents an encouraging picture for the concurrent validity of TORCH scores in the New Zealand classroom.

Whether the sample size was examined in terms of gender, ethnic group or SES, the results still indicated that TORCH correlated with PAT and teacher ratings to a significant degree.

At the Form 3 level, the correlation between PAT and TORCH for males was only moderate. However, in this instance TORCH scores were more highly correlated with teacher ratings than with PAT scores.

Initial indications are also that the TORCH is a valid tool to assess English reading comprehension of ESL pupils. However, further studies would be advisable prior to the widespread use of TORCH in this context.

The present sample size is rather too small to generalize about lower

means on each of the tests for Maori children and for the combined Maori and Pacific Islander group. SES and the limited number of schools involved may have been confounding variables.

One cautionary note is that care needs to be exercised in the choice of an appropriate TORCH passage; the correlations of the passage *Swamp Creature* with PAT and teacher ratings were comparatively poor, due to the marked ceiling effect occuring when the passage level is too simple for the class level.

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SUMMARY OF THE *TESTS OF READING COMPREHENSION (TORCH)* PILOT STUDY

A New Zealand pilot study has looked at *TORCH* scores in comparison to *PAT* scores and with teacher ratings. Approximately 100 Standard 3 pupils, 80 Form 1 pupils and 150 Form 3 pupils sat a TORCH passage and the appropriate level of Form C of the *PAT: Reading Comprehension*. Teachers also rated their pupils' reading comprehension on a 1-5 scale. In addition to looking at overall correlations between the tests, and between teacher ratings and each of the tests, correlations by gender, socio-economic status and ethnic group were examined.

Overall, correlations between *TORCH* and *PAT: Reading Comprehension* were generally high in this study, provided the appropriate *TORCH* passage was used. When the *TORCH* passage was too easy or too hard, scores were bunched at either end of the range and additionally, had a greater margin of error. Correlations between *TORCH* and teacher rating, and the *PAT* and teacher rating, were similar at the Standard 3 and Form 1 levels, as well as at the Form 3 level.

For Maori and Pacific Island groups correlations with both teacher ratings and the *PAT* were generally the same or higher than correlations for the European group.

The *PAT* and *TORCH* scores of a small group of predominantly ESL pupils were correlated, and indicated a moderate correlation. While first indications are that *TORCH* may be an appropriate method of assessing reading comprehension for pupils who have English as a second language, the sample sizes involved in this study are small and further study is recommended.

Overall, the results of this pilot study indicate that pupils' scores on *TORCH* correlate well with *PAT* and teacher ratings of reading comprehension. Since teacher ratings are based on standard classroom practice, these results present an encouraging picture of the validity of *TORCH* for the New Zealand classroom.

A full copy of the report of the *TORCH* pilot study is available on request, as is a summary of the views of a number of District Reading Advisers on the *TORCH*.

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